Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A method for color matching a first image and a second image, wherein a first region of the first image and a second region of the second image overlap, the method comprising:

generating a first histogram of the first region;

generating a second histogram of the second region;

determining corresponding pixel values from the first and the second histograms;

determining at least one parameter of an optoelectronic conversion function (OECF) that best matches the corresponding pixel values; and

color matching the second image to the first image by applying the OECF with the at least one parameter to the second image.

Claim 2 (original): The method of claim 1, further comprising, prior to said generating a first histogram and generating a second histogram:

removing a percentage of the overlapping pixels with the greatest difference in brightness.

Claim 3 (original): The method of claim 1, wherein:

said generating a first histogram comprises recording in a first plurality of pixel value bins a first plurality of numbers of pixels that have respective pixel values in the first region; and

said generating a second histogram comprises recording in a second plurality of pixel value bins a second plurality of numbers of pixels that have the respective pixel values in the second region.

Claim 4 (previously presented): The method of claim 3, wherein said determining corresponding pixel values from the first and the second histograms comprises generating a lookup table (LUT) storing a third plurality of numbers of pixels and their corresponding pixel values.

Claim 5 (original): The method of claim 4, wherein said generating a lookup table comprises:

(1) initializing all entries in the LUT to 0;

(2) initializing a first loop by setting $i = 0$; $j = 0$; *rem1* = h1[0]; and *rem2* = h2[0];

(3) updating the LUT by setting *min_rem* = min(*rem1*, *rem2*); *rem1* = *rem1* – *min_rem*; and *rem2* = *rem2* – *min_rem*; and incrementing LUT[*i*][*j*] by *min_rem*;

(4) if *rem1* = 0, then incrementing *i* and setting *rem1* = h1[*i*];

(5) if *rem2* = 0, then incrementing *j* and setting *rem2* = h2[*j*];

(6) if $i < 256$ and $j < 256$, then repeating steps (3) to (5);

wherein h1[] is the number of pixels having a certain pixel value in the first histogram, h2[] is the number of pixels having a certain pixel value in the second histogram, and LUT[][] is the number of pairs of corresponding pixel values having a certain pixel value in the first histogram and a certain pixel value in the second histogram.

Claim 6 (original): The method of claim 5, wherein said determining at least one parameter of an OECF comprises minimizing a color matching error, the color matching error being defined as:

$$e = \sum_{i=0}^{255} \sum_{j=0}^{255} LUT[i][j]((i+1)/256.0 - S^{-1}(\tau S((j+1)/256.0))),$$

wherein e is the color matching error, τ is a color matching parameter, and $S()$ is the OECF.

Claim 7 (original): The method of claim 6, wherein the OECF is defined as:

$$S(x) = x + \frac{2}{\pi} arctan\left(\frac{a\,sin(\pi x)}{1 - a\,cos(\pi x)}\right),$$

wherein x is a pixel value normalized to (0,1), and $a \in (-1,1)$ is another color matching parameter.

Claim 8 (original): The method of claim 7, wherein said minimizing a color matching error comprises performing a golden section search of the color matching error.

Claim 9 (original): The method of claim 8, wherein said performing a golden section search comprises:

(1) initializing the another color matching parameter and a minimum color matching error;

(2) performing the golden section search with the another color matching parameter being fixed and the color matching parameter being varied to determine a smallest color matching error achieved;

(3) recording values of the color matching parameter and the another color matching parameter that achieve the smallest color matching error if it is less than the minimum color matching error;

(4) setting the minimum color matching error equal to the smallest color matching error; and

(4) repeating steps (2) to (4) for a range of values of the another color matching parameter.

Claim 10 (previously presented): The method of claim 6, wherein said applying the optoelectronic conversion function comprises:

$$x_c = S^{-1}(W(\tau, x_o)S(x_o)),$$

wherein x_o is an original pixel value in the second image, x_c is a corrected pixel value in the second image, $S^{-1}()$ is the inverse of the OECF, and W is a weight function defined as:

$$W(\tau,\ x_o) = \tau + (1-\tau)x_o .$$

Claim 11 (original): The method of claim 1, wherein the OECF is defined as:

$$S(x) = x + \frac{2}{\pi} arctan\left(\frac{a\,sin(\pi x)}{1 - a\,cos(\pi x)}\right),$$

wherein $S()$ is the OECF, x is a pixel value normalized to (0,1), and $a \in (-1,1)$ is a first color matching parameter.

Claim 12 (original): The method of claim 11, wherein said determining at least one parameter of an OECF comprises minimizing a color matching error defined as:

$$e = \sum_{x_1 \in \Re_1, x_2 \in \Re_2} \left\| x_1 - S^{-1}(\tau S(x_2)) \right\|^2 ,$$

wherein e is the color matching error, x_1 and x_2 are corresponding pixel values in the first and the second regions, R_1 and R_2 are the first and the second regions, $S()$ is the OECF, $S()^{-1}$ is the inverse OECF, and τ is a second color matching parameter.

Claim 13 (original): The method of claim 12, wherein said minimizing a color matching error comprises performing a golden section search of the color matching error.

Claim 14 (original): The method of claim 13, wherein said performing a golden section search comprises:

(1) initializing the first color matching parameter and a minimum color matching error;

(2) performing the golden section search with the first color matching parameter being fixed and the second color matching parameter being varied to determine a smallest color matching error achieved;

(3) recording values of the first and the second color matching parameters that achieve the smallest color matching error if it is less than the minimum color matching error;

(4) setting the minimum color matching error equal to the smallest color matching error; and

(4) repeating steps (2) to (4) for a range of values of the first color matching parameter.

Claim 15 (previously presented): The method of claim 12, wherein said applying the OECF comprises:

$$x_c = S^{-1}(W(\tau, x_o)S(x_o)),$$

wherein x_o is an original pixel value in the second image, x_c is a corrected pixel value in the second image, and W is a weight function defined as:

$$W(\tau,\ x_o) = \tau + (1-\tau)x_o .$$

Claim 16 (previously presented): A method for color matching a first image and a second image, wherein a first region of the first image and a second region of the second image overlap, the method comprising:

removing a percentage of overlapping pixels with the greatest difference in brightness;

generating a first histogram of the first region and a second histogram of the second region after said removing;

histogram matching the first and the second histograms to determine corresponding pixel values from the first and the second histograms;

minimizing a color matching error between the corresponding pixel values, wherein the color matching error is generated from an optoelectronic conversion function (OECF); and

color matching the second image to the first image by applying the OECF to the second image.

Claim 17 (original): The method of claim 16, wherein said histogram matching the first and the second histograms comprises generating a lookup table (LUT) as follows:

(1) initializing all entries in the LUT to 0;

(2) initializing a first loop by setting $i = 0$; $j = 0$; $rem1 = h1[0]$; and $rem2 = h2[0]$;

(3) updating the LUT by setting $min\_rem = \min(rem1, rem2)$; $rem1 = rem1 - min\_rem$; and $rem2 = rem2 - min\_rem$; and incrementing LUT[i][j] by min_rem;

(4) if $rem1 = 0$, then incrementing i and setting $rem1 = h1[i]$;

(5) if $rem2 = 0$, then incrementing j and setting $rem2 = h2[j]$;

(6) if $i < 256$ and $j < 256$, then repeating steps (3) to (5);

wherein h1[] is the number of pixels having a certain pixel value in the first histogram, h2[] is the number of pixels having a certain pixel value in the second histogram, and LUT[][] is the number of pairs of corresponding pixel values having a certain pixel value in the first histogram and a certain pixel value in the second histogram.

Claim 18 (previously presented): The method of claim 17, wherein the color matching error is defined as:

$$e = \sum_{i=0}^{255}\sum_{j=0}^{255} LUT[i][j]((i+1)/256.0 - S^{-1}(\tau S((j+1)/256.0))),$$

wherein e is the color matching error, τ is a color matching parameter, and $S()$ is the OECF defined as:

$$S(x) = x + \frac{2}{\pi} arctan\left(\frac{a\,sin(\pi x)}{1 - a\,cos(\pi x)}\right),$$

wherein $S()$ is the OECF, x is a pixel value normalized to (0,1), and $a \in (-1,1)$ is another color matching parameter.

Claim 19 (original): The method of claim 18, wherein said minimizing a color matching error comprises performing a golden section search of the color matching error comprising:

(1) initializing the another color matching parameter and a minimum color matching error;

(2) performing the golden section search with the another color matching parameter being fixed and the color matching parameter being varied to determine a smallest color matching error achieved;

(3) recording values of the color matching parameter and the another color matching parameter that achieve the smallest color matching error if it is less than the minimum color matching error;

(4) setting the minimum color matching error equal to the smallest color matching error; and

(5) repeating steps (2) to (4) for a range of values of the another color matching parameter.

Claim 20 (previously presented): The method of claim 19, wherein said applying the OECF to the second image comprises:

$$x_c = S^{-1}(W(\tau, x_o)S(x_o)),$$

wherein x_o is an original pixel value in the second image, x_c is a corrected pixel value of the second image, and W is a weight function defined as:

$$W(\tau,\ x_o) = \tau + (1-\tau)x_o\ .$$